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**Amendments to the Claims**

- 1 - 4. (cancelled)
5. (currently amended) The method of claim 12 4, wherein the FOM is a line width.
6. (currently amended) The method of claim 12 4, wherein the FOM is a percentage difference in overall area of the first and second simulated structures.
7. (currently amended) The method of claim 25 4, where first and second simulated wafer structures are obtained by the same simulation method.
8. (currently amended) The method of claim 25 4, where first and second simulated wafer structures are obtained by aerial image simulation.
9. (currently amended) The method of claim 25 4, where first and second simulated wafer structures are obtained by different simulation methods.
10. (currently amended) The method of claim 25 4, further comprising displaying the first simulated wafer structure on a display screen.
11. (previously presented) The method of claim 10, further comprising displaying the second simulated wafer structure on the display screen, wherein the first and second simulated wafer structures at least partially overlap with one another.
12. (original) The method of claim 11, providing a user an option of selecting a figure of merit (FOM) by which critical dimension variations between the simulated wafer structures are to be calculated.

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13. (currently amended) The method of claim 25 4, wherein the imaging includes using a scanning electron microscope (SEM) to obtain an SEM image.
14. (original) The method of claim 13, further comprising transforming the SEM image into computer-readable data.
15. (original) The method of claim 14, wherein the transforming includes applying an image analysis algorithm to the image data.
16. (original) The method of claim 14, further comprising scaling the data.
17. (currently amended) The method of claim 25 4, further comprising transforming data of a first type, obtained in the imaging, into data of a second type, to be used in the simulating.
18. (currently amended) The method of claim 25 4, wherein the simulating includes aerial simulation using a computer program.
19. (original) The method of claim 18, wherein the simulating also includes simulating the developed resist image.
20. (currently amended) The method of claim 25 4, wherein the simulating includes simulating using an aerial image microscope system.
- 21 - 23. (cancelled)
24. (currently amended) The method of claim 25 4, further comprising forming at least one of the first and second simulated wafer structures at various stages of the wafer structure formation process, and overlaying all of the simulated wafer structures on a display screen.

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25. (currently amended) ~~A~~ The method of claim 1, further comprising analyzing a mask manufacturing process, the method comprising:

Imaging at least a portion of a mask to be used in a wafer structure formation process;

simulating lithographic processing using data received from or derived from the imaging of the portion of the mask, thereby obtaining a first simulated wafer structure;

simulating lithographic processing using mask design data corresponding to the imaged portion of the mask as an input, thereby obtaining a second simulated wafer structure;

comparing the first simulated wafer structure to the second simulated wafer structure;

comparing the first and second simulated wafer structures to an ideal wafer structure; and

based on the comparing steps, evaluating critical dimension variations across the wafer structure.

26. (currently amended) The method of claim 25 4, further comprising determining a location of greatest critical dimension variation between the first and second simulated wafer structures.

27. (cancelled)